



**Z Technology
AV1010
Video Decoder**

**USER MANUAL
Version 1.1**

**Sept 15, 2004
Z Technology, Inc.
1815 NW 169th Place Suite 3070
Beaverton, OR 97006 USA
Tel: 503-614-9800 Fax: 503-614-9898**

WARRANTY

Z Technology Inc. warrants to its Customers that the products it manufactures and sells will be free from defects in materials and workmanship for a period of one (1) year from the date of delivery. If any such product proves defective during the application warranty period, Z Technology Inc. at its option, either will repair the defective product without charge for parts and labor or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, Customer must notify Z Technology Inc. of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Z Technology Inc. will provide such service at its headquarters or at one of its authorized service centers. Customer shall be responsible for all taxes, duties, packaging, shipping and insuring of the defective product to the service center designated by Z Technology Inc. with all these expenses prepaid. Z Technology Inc. shall pay for return shipping to Customer at the same location from which the product was shipped.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Z Technology Inc. shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than Z Technology Inc. representatives to install, repair or service the product; or b) to repair damage resulting from improper use or connection to incompatible equipment.

THIS WARRANTY IS GIVEN BY Z TECHNOLOGY INC. IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED. Z TECHNOLOGY INC. AND ITS VENDORS DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Z TECHNOLOGY INC.' RESPONSIBILITY TO REPAIR OR REPLACE A DEFECTIVE PRODUCT IS THE SOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR BREACH OF THE WARRANTY. Z TECHNOLOGY INC. AND ITS VENDORS WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, IRRESPECTIVE OF WHETHER Z TECHNOLOGY INC. OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES.

Table of Contents

TABLE OF CONTENTS	I
SECTION 1: SPECIFICATIONS.....	1-1
Specifications	1-1
SECTION 2: PRODUCT OVERVIEW.....	2-1
Overview:.....	2-1
SECTION 3: CONNECTING THE AV1010	3-0
Front Panel Controls and LEDs.....	3-0
Rear Panel Jacks and Switches.....	3-1
Connecting Signal Sources	3-3
Antenna Signal Source	3-3
DM1010 (44MHz IF) Signal Source.....	3-3
Connecting to a TV set.....	3-4
Connecting to a Computer Monitor	3-5
Connecting HDTV Monitor with Component Video	3-5
Connecting a Digital Audio input device.....	3-6
Connecting to a HDTV monitor with DVI	3-6
Disabling the IR Remote Control.....	3-6
SECTION 4: ON SCREEN MENUS	4-1
On-Screen Menu System	4-1
Using On-Screen Help	4-1
Viewing Information	4-2
SECTION 5: OPERATION	5-0
Memorizing Channels (with RF Input)	5-0
Memorizing Channels (with IF Input).....	5-1
Adding and Deleting Channels.....	5-2
Changing Channels	5-3
Using the RF input	5-3
Using the IF input.....	5-3

Fine Tuning Analog Channels	5-4
Checking the Digital Signal Strength.....	5-5
Setting the Time and Date.....	5-6
SECTION 6: SPECIAL FEATURES.....	6-1
Changing Screen Format	6-1
Choosing a Sound “Multitrack” on a received Digital signal.....	6-4
Choosing a Sound “Multitrack” on a received Analog signal	6-4
Choosing a digital Sound Format (Dolby or PCM)	6-5
Using Dynamic Range Compression (DRC)	6-6
Setting up Digital Captions (On-Screen Text Messages)	6-7
Setting up Analog Captions (On-Screen Text Messages)	6-9
Viewing Information about a Single Channel	6-10
Viewing Information about Channels	6-11
SECTION 7: MAINTENANCE	7-1
Introduction	7-1
SECTION 8: OPTIONS & ACCESSORIES	8-1
Options	8-1
Accessories	8-1
SECTION 9: APPENDIX A	9-1
Trouble Shooting	9-1
SECTION 10: APPENDIX B	10-1
Option SDI User Manual	10-1

Section 1: Specifications

Specifications

GENERAL SPECIFICATIONS	
Broadcast Standard	Digital ATSC/8VSB, Analog NTSC
Frequency Coverage	U.S. Television channels 2 - 69
Tuning Method	Automatic channel sensing and direct entry with front panel button via on screen menu navigation, or IR remote via on screen menu navigation. Consumer IR remote supplied. IR lockout available.
Operating Temperature	0 ° C to +45 ° C
Power Requirement	AC 120V, 50/60 Hz
Power Consumption	55 watts, In Standby: 17 watts
Dimensions	2U 19" rackmount enclosure 15" deep. 3.5 x 17* x 17** inches (H x D x W) * including 1.5" deep Handles ** without supplied rack ears
Weight	10 lbs (4.5 Kg)
Inputs	75 ohm BNC from VHF/UHF antenna (type BNC to type F adapter supplied) 50 ohm BNC from 44MHz IF inverted
Video Output formats	NTSC: 480i/59.94; 75 ohm RCA S-Video: 480i/59.94; 75 ohm Y/C, DIN Component HD: 1080i, 720p or 480p; YPbPr 75 ohm BNCs or 1080i, 720p or 480p; RGB 15 pin / DVI 25 Optional Serial Digital: SMPTE 259M 75 ohm BNC
Audio Output formats	Stereo 600 ohm balanced: -20 dBm, XLRs Stereo HiZ: RCA Connectors Digital: Optical and Coaxial

Section 2: Product Overview

Thank you for choosing Z Technology

Thank you for choosing Z Technology. We know that you have a choice in electronic equipment suppliers and we appreciate the choice you've made. We strive to provide the best value by including the features you want and need and do it at the at the best possible price. Your new AV1010 Video Decoder has easy to use front panel controls to navigate on screen menus. It receives both Analog NTSC signals, and Digital ATSC 8VSB signals. It provides video outputs in both Digital and Analog formats. We are pleased to offer this product that will provide convenient dependable service for years to come.

Overview:

The AV1010 is a Commercial Receiver for off Air DTV signals. It features rugged construction, professional level outputs, and forced air cooling for long term reliable unattended 24/7 operation. It may be mounted in a 19" rack, or placed on a table or shelf. It has a 75 ohm antenna input, or may be connected to a 44MHz inverted IF source such as the Z Technology DM1010 8VSB Demodulator.

Pairing the DM1010 8VSB Professional Demodulator with the AV1010 Commercial Receiver immensely enhances the ability to characterize the received ATSC 8VSB signal. The AV1010 provides visual inspection of the received signal. The DM1010 provides accurate calibrated and traceable power level measurement, tap energy, signal to noise, sync lock and equalizer lock metrics. All metrics may be displayed instantaneously or displayed graphed over time, monitored and recorded via a PC attached to the DM1010 with the "WinDM" software. Additionally since the DM1010 has network capability all may be monitored remotely. The DM1010 also provides Transport stream out in several formats. The WinDM software also provides constellation and eye pattern displays.

The AV1010 translates all 18 ATSC digital video formats to a single digital format selected by rear panel switches. The output digital video format is selected to be available on Y, Pb, Pr output or RGB output or DVI output. The output rate is selectable between 1080i(interlaced), 720p(progressive), and 480p(progressive). Independent of the digital output selected, a down converted version of the received signal is always available on its Analog NTSC Composite video and NTSC S Video outputs.

The AV1010 outputs Stereo audio on 600 ohm balanced stereo audio outputs to minimize hum pickup, or on Hi-Z RCA jacks. It outputs digital audio on optical connector or an RCA jack.

In a broadcast studio environment the AV1010 is ideal for visual inspection of the off air received broadcast signal via a connected Analog or Digital monitor. Outside the studio the AV1010 is a low cost high quality front end for a translator or cable head end.

Section 3: Connecting the AV1010

Front Panel Controls and LEDs

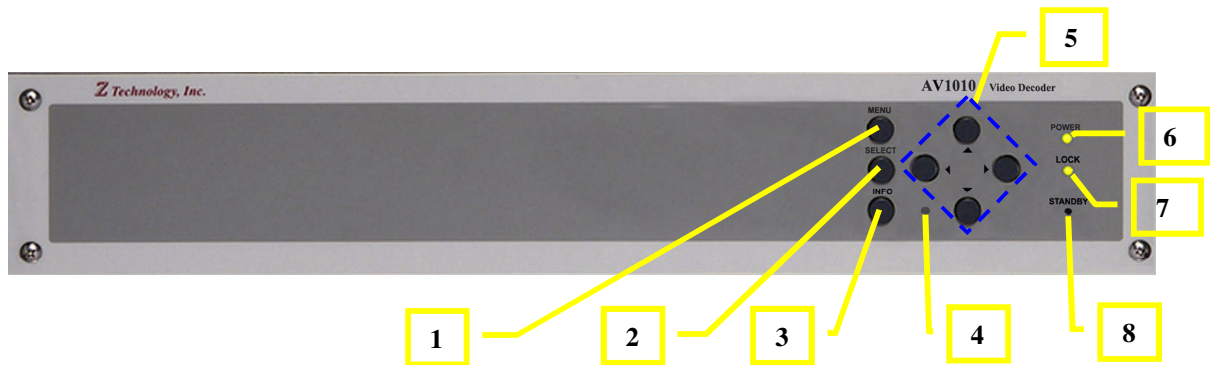


Figure 1: AV1010 Front Panel

1. **MENU:** Press to Display the on-screen menus.
2. **SELECT:** Press to activate a selection when using the on-screen menus.
3. **INFO:** Press to display information about the current AV1010 settings and program: Channel number, time Program title Program duration, Caption, Rating control, Digital picture grade, and MTS language.
4. **IR:** Infra Red Sensor. See the "Disabling the IR Remote Control" section of this manual for instructions on how to disable this feature.
5. **MENU UP/DOWN/LEFT/RIGHT:** Use to change channels or to move highlight (when using on-screen menus.)
6. **POWER:** Power on LED indicator
7. **LOCK:** DTV channel received and video decoder locked.
8. **STANDBY:** Use a straightened paper clip in this hole to put the AV1010 in standby mode. In this mode the unit will respond to the Power button on the remote control if the IR sensor is enabled.

Rear Panel Jacks and Switches

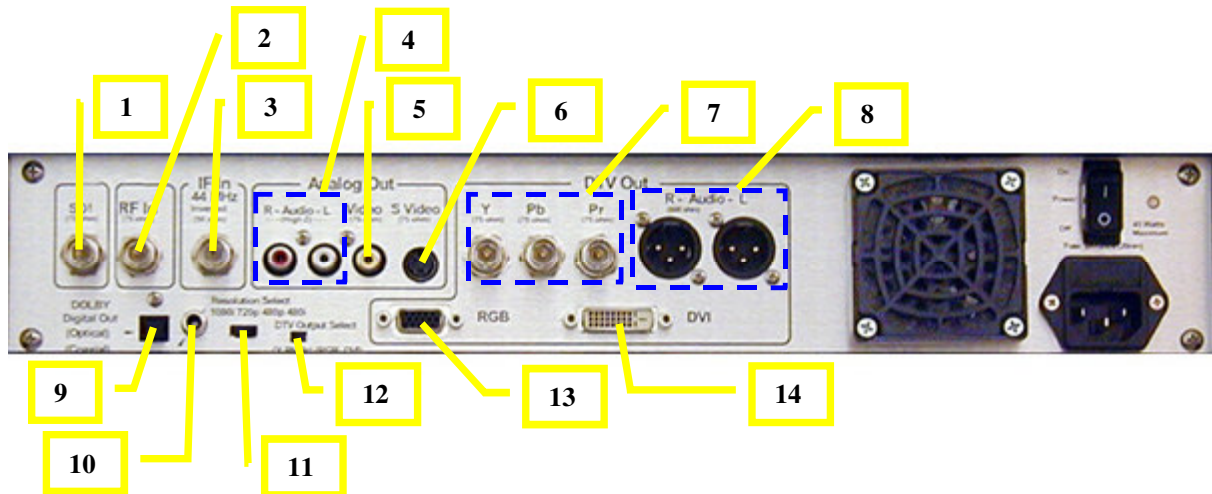


Figure 2: AV1010 Rear Panel

1. **SDI Out:** (Optional) Serial Digital Interface Output. Use this to drive SDI devices for signal quality measurement, or signal distribution.
2. **RF In:** Connect to Air Antenna (standard default input)
3. **IF In:** Connect to 44MHz IF output of Z Technology DM1010 Demodulator, or to a tap before an exciter at -5 dBm to -15dBm nominal level. (see "DM1010 (44MHz IF) Signal Source" section for instructions on how to enable the 44 MHz IF input)
4. **Right/Left Audio Out:** Connect to Hi-Z inputs of audio equipment or TV audio connectors.
5. **Video Out:** Composite Video Output. Connect to analog TV video input that does not have S Video input.
6. **S Video Out:** S Video Output. Connect to analog TV video input. This is a higher quality output than the Video Output #5 above because it contains separate luminance and chromance channels.
7. **DTV Out Component (Y, Pb, Pr format):** Connect to a Y, Pb, Pr TV, or computer monitor, or other video component input. 1080i, 720p, and 480p are available by setting the **Resolution Select Switch**.
8. **Right/Left Audio Out:** Connect to balanced 600 ohm audio input device.
9. **Digital Audio Out:** (Optical) Connect to the TV optical digital audio input, or other audio device.
10. **Digital Audio Out:** (Coaxial) Connect to the TV coaxial digital audio input or other audio device.

- 11. Resolution Select Switch:** Switches between 1080i (interlace scanning), 720p (progressive scanning), 480p (progressive scanning), and 480i (interlace scanning) formats. Switches the **DTV OUT(Y,Pb,Pr/RGB)** to the following formats.

1080i (Interlaced Scanning)

Use this setting for an HDTV Ready 16x9 (wide screen) aspect ratio TV monitor with HDTV ready video inputs that can handle 1080i output format.

720p (Progressive Scanning)

Use this setting for an HDTV Ready 16x9 (wide screen) aspect ratio TV monitor with HDTV ready component video inputs that can handle 720p output format.

480p (Progressive Scanning)

Use this setting for an HDTV Ready 4x3 aspect ratio TV monitor with progressive scanning DTV ready component video inputs that can handle 480p output format.

480i (Progressive Scanning)

Use this setting for a analog TV with regular video, S Video, or Component video inputs.

- 12. DTV OUT Select:** Use to select the **Y, Pb, Pr** output, or the **RGB** and **DVI** outputs.
- 13. DTV OUT (RGB format):** Connect to an RGB TV or computer monitor, or another component video device input. 1080i, 720p, and 480p are available by setting the **Resolution Select Switch**.
- 14. DTV OUT:** Connect to a device equipped with a DVI interface. DVI OUT supports HDCP function.

Connecting Signal Sources

Antenna Signal Source

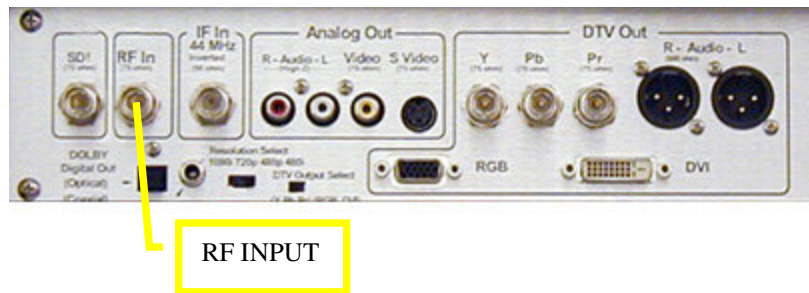


Figure 3: Antenna RF Input

For over the air (terrestrial) reception connect an antenna to the RF IN input shown below. The antenna may be an indoor antenna, an outdoor antenna, a multi-band UHF/VHF antenna or a single frequency tuned antenna. The antenna may need to be adjusted or pointed for optimum reception. The RF input is a 75 ohm BNC. An F to BNC adapter is supplied if needed.

DM1010 (44MHz IF) Signal Source

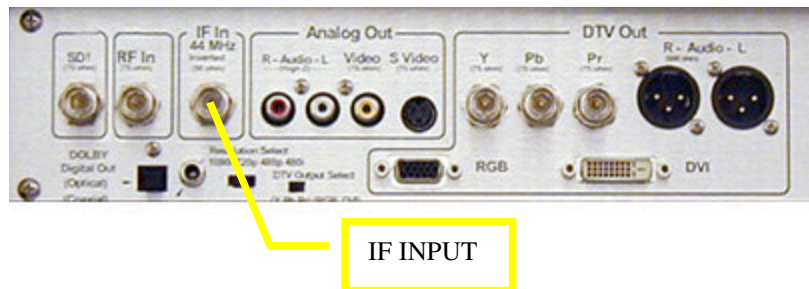


Figure 4: IF Input 44 MHz (Inverted)

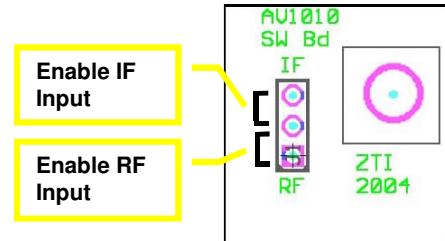
The AV1010 is configured to use the RF Input as a source when shipped from the factory.

To enable the IF Input a jumper inside the instrument must be changed.

To change the jumper for IF input:

1. Remove the four screws on the top of the instrument.
2. Slide the cover back to expose the interior.

3. Locate the small RF switch board next to tuner (the metal box on the main board). On the RF switch board, move the jumper to the top position. This disables the RF input and enables the IF input.



4. Slide the cover back into position.
5. Replace the four screws on the top of the instrument.

Connect to 44MHz IF output of Z Technology DM1010 Demodulator, or to a tap before an exciter at -5 dBm to -15dBm nominal level.

*NOTE: When **IF Input** is selected AV1010's tuner is by-passed and the connected DM1010 is tunes the channel or in the case of being connected to the IF output of a modulator the modulator is providing the signal. This has some side effects the user should be aware of. The AV1010 will see the channel of the IF source on all of it's internal memory channels 2-69. In other when the AV1010 memorizes channels, it will appear to the AV1010 that there is a signal on every channel 2-69. The signal it finds on each 'internal' memory channel is the single channel that is fed into the IF Input at 44 MHz. Using the AV1010 front panel controls or remote control to change channels will make the AV1010 think it is tuning a new channel but in fact no change of tuning has occurred.*

Connecting to a TV set



Figure 5: Connect Analog TV

Video connection to an analog TV maybe with the Composite Video Output or the S Video Output. The S Video connection will produce a slightly higher quality picture than the Composite Video Output. Audio connection to an analog TV is via the R/L Audio outputs.

*NOTE: The AV1010 On-screen menus will appear on the Analog TV screen only if the **Resolution Select** Switch is set to **480i**, and the **DTV Out** Switch is set to **RGB/DVI***

Connecting to a Computer Monitor



Figure 6: Connect computer monitor

Connection to a Computer monitor is via the RGB connector.

Audio connections to amplified speakers are via the Analog Audio Right/Left connectors. Audio for distribution may be connected to the 600 ohm balanced Audio outputs, or the Digital Audio Optical or Coaxial output.

*NOTE: The AV1010 On-screen menus will appear on the Computer monitor only if the **DTV Out** Switch is set to **RGB/DVI** and the **Resolution Select** Switch is set to **1080i**, **720p**, or **480p**.*

Connecting HDTV Monitor with Component Video

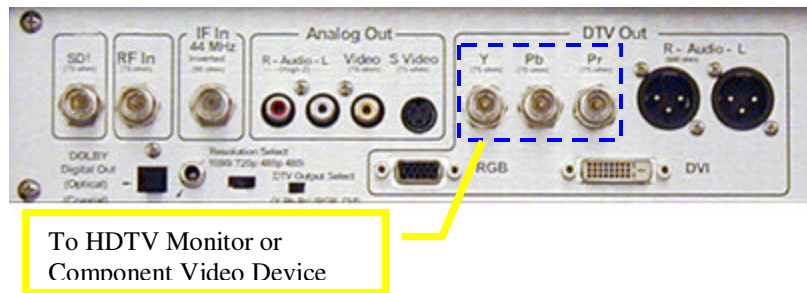


Figure 7: Connect HDTV Monitor or Component Video Input Device

Connect a HDTV monitor or a Component Video input device to the DTV Out Y, Pb, Pr Outputs. Audio connections to amplified speakers are via the Analog Audio Right/Left connectors. Audio for distribution may be connected to the 600 ohm balanced Audio outputs, or the Digital Audio Optical or Coaxial output.

*NOTE: The AV1010 On-screen menus will appear on the HDTV Monitor only if the **DTV Out** Switch is set to **Y,Pb, Pr**, and the **Resolution Select** Switch is set to **1080i**, **720p**, or **480p**.*

Connecting a Digital Audio input device



Figure 8: Connect Digital Audio Input device

Connect a Digital Audio input device to the Digital Output **Optical** connector or the Digital output **Coaxial** connector. If the Digital Audio device has both inputs use the optical connection.

Connecting to a HDTV monitor with DVI



Connect a HDTV monitor or a Digital DVI input to the DTV Out **DVI** Output. Audio connections to amplified speakers are via the Analog Audio Right/Left connectors. Audio for distribution may be connected to the 600 ohm balanced Audio outputs, or the Digital Audio Optical or Coaxial output.

*NOTE: The AV1010 On-screen menus will appear on the HDTV Monitor only if the **DTV Out** Switch is set to **RGB/DVI**, and the **Resolution Select** Switch is set to **1080i**, **720p**, or **480p**.*

Disabling the IR Remote Control

When shipped from the factory, the AV1010 Remote Control IR sensor is Enabled. This enables use of the Remote Control. This is a handy way to quickly enter channel numbers as well as navigate the AV1010 built in menus. If the Remote Control is used it must be used by a knowledgeable user. Improper use may create some operational inconsistencies, or problems. Reasons one might want to disable the IR Remote Control Sensor are:

- If several AV1010 units are located in one room it may be beneficial to disable the IR sensors for the remote control so all units do not react to a remote control.
- An operational inconsistency is introduced if the **TV/Video** button is pressed on the remote control. Internally the AV1010 has four video sources. The Channel tuner input is just one of

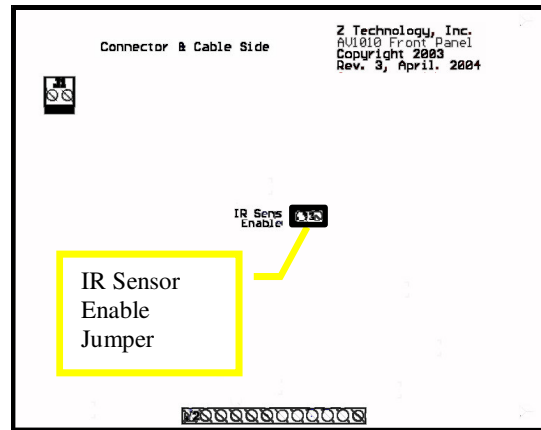
the four sources, there are three more non used sources. If the **TV/Video** button is pressed once on the Remote Control, internally the AV1010 switches to one of the non used video sources. The **TV/Video** button must be pressed three more times to cycle back to the Channel tuner as the video source. If an NTSC monitor is connected a message in the upper right hand of the screen will temporarily appear after the **TV/Video** button is pressed. It will indicate which of the four internal video sources are active. **AV1**, **AV2**, Tuner **Channel** number, or **DVD**. The Tuner **Channel** number is the Factory setting. This messages does not appear on any other monitor output.

To Disable IR sensor for Remote Control:

1. Remove the four screws on the top of the instrument.

2. Slide the cover back to expose the interior.

3. Locate the circuit board attached to the unit front panel. Near the center of the board is a jumper connecting two square pins. Pull the jumper and move it so it is just on one pin. This disables the Remote Control IR sensor, and give a means to store the jumper, should the IR Sensor need to be re-enabled.



4. Slide the cover back into position.

5. Replace the four screws on the top of the instrument.

Section 4: On Screen Menus

On-Screen Menu System



First, press the front panel **MENU** button, then the **UP/DOWN/LEFT/RIGHT** front panel buttons to move between menus.

To enter a particular menu, press the **SELECT** button. The AV1010 has three different levels. The five icons on left side of the screen are the "Level 1" menu: Guide, Preferences, Channel, Setup, and FireWire. When you activate one of these five icons, the On-screen display presents a "Level 2" submenu which may then lead to a "Level 3" submenu.

To exit the on-screen menu, press the **MENU** button to back up a menu level, until the menu disappears, or wait 2 minutes. After two minutes of no menu activity the On-screen activity timeout will exit the On-screen menu, and the menus will disappear.

*Note: The **Resolution Select** switch and the **DTV output** select switch must be set in the correct positions to see the On-screen menus on the monitor you are using. See "Section 3: Connecting the AV1010" for your type of monitor and verify the correct switch settings.*

Note: The FireWire selection in the "Level 1" menu has no effect as the AV1010 does not have a FireWire output.

Using On-Screen Help

To turn the on-screen help on:

1. Press the front panel **MENU** button.

2. Use the front panel **UP/DOWN** buttons to highlight the Preference icon then press **SELECT**.



3. "Help: Off" changes to "Help On" and the on-screen help line appears below the menu.

Use the **UP/DOWN** buttons to highlight each of the icons and read the description of the feature that each icon represents.

You can press the **MENU** button to back-up one level in the on-screen menus until the menus clear from the screen.

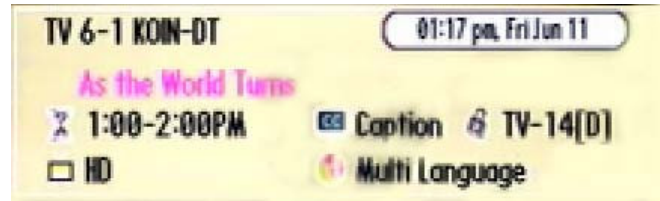
To turn the on-screen help off:

Use the **UP/DOWN** buttons to highlight the "Help: Off" icon, then press **SELECT**. The on-screen help will no longer appear.

Viewing Information

You can quickly check the status of many of the AV1010 features and options by using the front panel **INFO** button.

- ◆ The major channel number and the minor channel number (if you are viewing a digital channel).
- ◆ The current time and date. See "Setting the Time and Date" section .
- ◆ Program title.
- ◆ Program duration.
- ◆ The status of closed captions (if the broadcast includes them, and if you have turned on the closed captions feature.) See "Setting up Digital Captions (On-Screen Text Messages)" and "Setting up Analog Captions (On-Screen Text Messages)" sections.
- ◆ The digital picture grade, such as HD(High Definition) or SD (Standard Definition).
- ◆ The audio track languages (English, Spanish, French). See ""Choosing a Sound "Multitrack" on a received Digital signal"" and ""Choosing a Sound "Multitrack" on a received Analog signal"" sections.



To view the Info:

Press the front panel **INFO** button.

To hide the Info:

Press the **INFO** button again or wait 10 seconds, and the Info will disappear.

Section 5: Operation

Memorizing Channels (with RF Input)

Before you can use the channel buttons (the front panel UP/DOWN buttons), the available channels must first be scanned and memorized. This is an easy, automatic process that typically takes two minutes. This applies only to the AV1010 using the RF input. See the “Memorizing Channels (with IF Input)” section of this manual for the AV1010 used with the IF input.

To memorize channels:

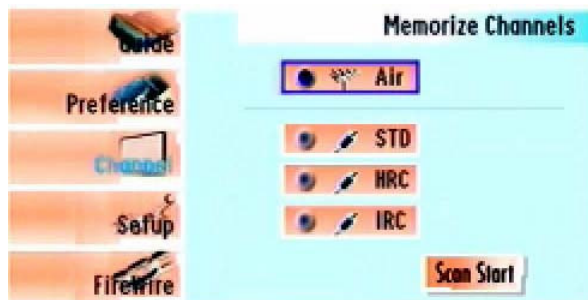
-
1. Press the front panel **MENU** button.
-

2. Use the **UP/DOWN** buttons to highlight the *Channel* icon, then press **SELECT**.

Use the **UP/DOWN** buttons to highlight the *Memorize Channels* icon, then press **SELECT**.



3. Use the **UP/DOWN** buttons to highlight *Air* icon, then press **SELECT**
Use the **UP/DOWN** buttons to highlight *Start Scan* icon, then press **SELECT**.



-
4. That's it. The AV1010 will automatically scan and store all to the digital (DTV) and analog channels that are available in your local area.
-
5. To exit the on-screen menu, press the **MENU** button three times, or wait 2 minutes for the On-screen display activity timeout.
-

NOTES: The AV1010 RF Input must be connected to an antenna in order to receive digital TV signals. Even if a particular channel is deleted from the memory, you can always tune that channel later. See the “Adding and Deleting Channels” Section of this manual.

Memorizing Channels (with IF Input)

If your AV1010 was equipped to use the IF input from the factory it is configured to have just one channel in its memory or internal channel plan. The one channel is Channel 2. If you are switching your AV1010 from using the RF input to using the IF input, use the following procedure to setup the factory configuration.

-
1. Create a memory configuration with no channels in it. Do this by Memorizing channels with no signal input.

Disconnect the AV1010 rear panel IF input. There should be no signal inputs to the AV1010. Follow Steps 1, 2, and 3 of the “Memorizing Channels (with RF Input)” section above.

-
2. Create a memory configuration with just channel 2.

Follow Steps 1, 2, and 3 of the “Adding and Deleting Channels” section later in this manual. Note you will have to use the UP/DOWN buttons to tune Channel 2 in step 2.

Adding and Deleting Channels

To add channels that were not memorized or to delete unwanted channels from the memory:

1. Press the front panel **MENU** button

2. Use the **UP/DOWN** buttons to highlight the *Channel* icon, then press **SELECT**.

Use the **UP/DOWN** buttons to highlight the *Add/Delete Channels* icon, then press **SELECT**.



3. Repeatedly pressing the **SELECT** button will alternate between the Add Channel and Delete Channel screen. You may tune a different channel by pressing the **UP/DOWN** buttons.

If the currently tuned channel is not already in memory, an Add Channel screen appears.

If the currently tuned channel is already in memory a Delete Channel screen appears



4. Press the **MENU** button three times to exit the on-screen menus, or wait 2 minutes for the On-screen display activity timeout.

*NOTE: The on-screen menus refer to the front panel **SELECT** button as "ENTER".*

Changing Channels

Using the RF input

To change channels when using the AV1010 RF input, press the front panel **UP/DOWN** buttons. Each press of the **UP** button will change the next higher channel in memory. Each press of the **DOWN** button will change the channel to the next lower channel in memory. A broadcaster may be transmitting on two frequencies. Their legacy Analog frequency and their borrowed digital frequency. Additionally there may be multiple standard definition program streams or sub channels on the terrestrial digital frequency.

Example: A broadcaster is transmitting an analog signal on their channel 6 legacy frequency. The broadcaster is also transmitting two standard definition program streams or sub channels on it's digital frequency occupying the terrestrial channel 40 spectrum space. When the AV1010 tunes the analog channel "6-0" momentarily displays on screen. One press of the UP button tunes channel 40 of terrestrial spectrum space and select sub channel 1. "6-1" on the screen displays momentarily on the screen. A second press of the UP button doesn't change the terrestrial spectrum space tuning selects the second sub channel. "6-2" displays momentarily on the screen. A third press of the UP button tunes to the next higher terrestrial space channel in memory above the terrestrial space channel 6. The channel information displayed momentarily on the screen is for analog signals is the terrestrial space channel, for digital signals it is decoded from the broadcast PID information in the digital signal.

The front panel **DOWN** button works similar to the **UP** button but in reverse order.

*NOTE: You must first complete the "Memorize Channels" procedure before you can use the AV1010 front panel **UP/DOWN** buttons to change channel. See the "Memorizing Channels (with RF Input)" section.*

Using the IF input

The AV1010 RF Tuner is bypassed when the IF Input is used. Therefore pressing the AV1010 UP/DOWN buttons though they may change the on screen channel number really has no effect on the terrestrial tuned channel. The terrestrial channel tuning is done by the device connected to the IF input.

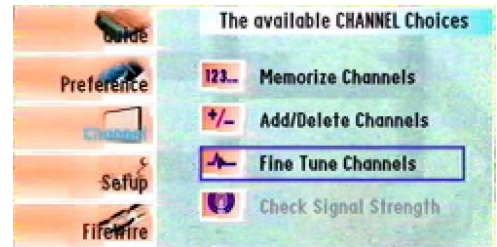
Fine Tuning Analog Channels

The Fine Tuning function lets you manually adjust the AV1010's tuner if you have difficulty tuning analog channels.

1. Press the front panel **MENU** button

2. Use the **UP/DOWN** buttons to highlight the Channel icon and press **SELECT**

Use the **UP/DOWN** buttons to highlight the Fine Tune Channel icon and press **SELECT**



3. Using the **LEFT/RIGHT** buttons, adjust the current broadcasting channel for fine tuning. If you want to cancel the "Manual Fine Tuning", use the **LEFT/RIGHT** buttons to "0" the display, then press the **MENU** three times.



4. To Exit, press the **MENU** button three times, or wait 2 minutes for the On-screen display activity timeout.

NOTE: Only analog TV channels can be fine tuned.

Checking the Digital Signal Strength

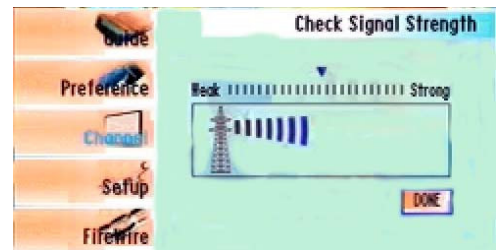
Unlike analog channels, which can vary in reception quality from “snowy” to clear, digital (HDTV) channels have either perfect reception quality or you will not receive them at all. So, unlike analog channels, you cannot fine tune digital channels. You can, however, adjust your antenna to improve the reception of available digital channels.

-
1. Press the front panel **MENU** button
 2. Use the **UP/DOWN** buttons to highlight the Channel icon and press **SELECT**.

Use the **UP/DOWN** buttons to highlight the Check Signal Strength icon and press **SELECT**.



-
3. If the signal strength indicates the the signal is weak, physically adjust your antenna to increase the signal strength. Continue to adjust the antenna until you find the best position with the strongest signal.



-
4. When you have finished adjusting your antenna, use the **UP/DOWN** buttons to highlight “Done” and press **SELECT**.
-

NOTE: “No Signal” may appear on the screen depending on the broadcasting station conditions, even though an incoming broadcast signal exists.

Setting the Time and Date

First, select the channel that has a digital signal.

1. Press the front panel **MENU** button

2. Use the **MENU UP/DOWN** buttons to highlight the Setup icon and press **SELECT**

Use the **MENU UP/DOWN** buttons to highlight the Auto Time Setup icon and press **SELECT**.

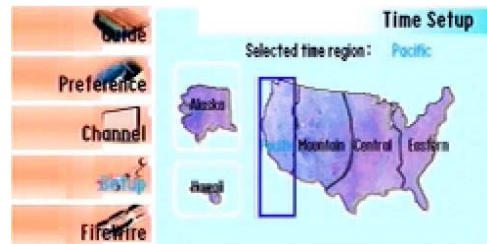


3. You will be asked if your local area observes Daylight Savings Time. Use the **MENU UP/DOWN** button to highlight Yes, or No, and press **SELECT**.



4. Use the **MENU UP/DOWN LEFT/RIGHT** buttons to highlight the time zone for your local area (and to move highlight to the appropriate time zone on the map of the United States). Press **SELECT**.

That's it. As you have received a digital signal, the time will be set automatically.



5. To exit, press the **MENU** button three times, or wait 2 minutes for the On-screen display activity timeout.

Section 6: Special Features

Changing Screen Format

Your options in the Screen Format menu depends on the type of TV or monitor you are using with the AV1010.

1. Press the front panel **MENU** button.

2. Use the **UP/DOWN** buttons to highlight the Setup icon and press **SELECT**.

Use the **UP/DOWN** buttons to highlight the Screen Format icon and press **SELECT**.

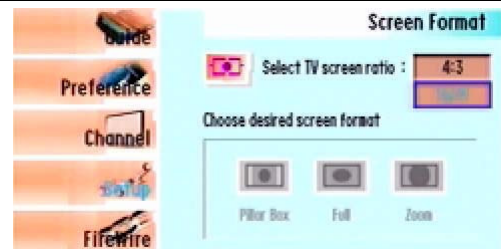


3. Use the **UP/DOWN** buttons to highlight the TV screen ratio icon and press **ENTER**. The sub menus will be displayed.

Then, use the **UP/DOWN** buttons to select the sub menu you want and press **SELECT**.

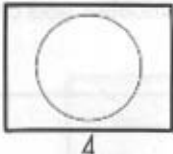
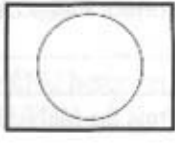
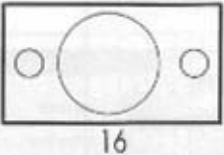
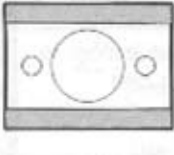
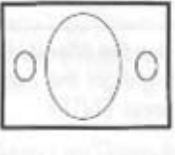
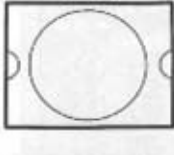


4. Use the **LEFT/RIGHT** buttons to highlight the screen format you want and press **SELECT**.



5. To Exit, Press the **MENU** button three times, or wait 2 minutes for the On-screen display activity timeout.

NOTE: You can also change the screen format by

Source Signal	4:3 MONITOR FORMAT		
	LETTER BOX	FULL	ZOOM
3 		* 	
9 	* 		

With a 4:3 Ratio TV or Monitor

If you are using a 4:3 aspect ratio TV or monitor and receiving an image with a 16:9 aspect ratio, you need to specify how the image is displayed.

Letter Box

Choose this option when receiving a 16:9 image and you want to see the original wide formats. Letter boxing shrinks the picture so the entire image will fit on the screen. Blank panels appear at the top and bottom of the screen. 1080i does not support letter box mode. Full mode will be automatically selected.

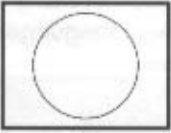
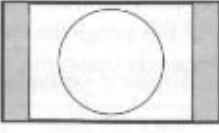
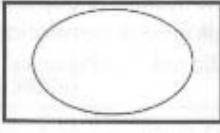
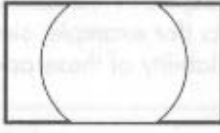
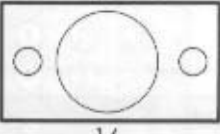
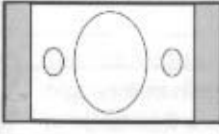
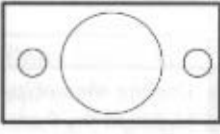
Full

Choose this when you want the television to adjust the 16:9 image vertically so it fills your 4:3 screen. No blank panels will be added, and the image is horizontally unaltered.

Zoom

Choose this when receiving a 16:9 image and you want the wide movie format to fill the entire screen. Left and Right portions of the picture are cropped, or cut.

NOTE: This indicates the default format in each condition, which may be modified by user's choice.

Source Signal	16:9 MONITOR FORMAT		
	PILLAR BOX	FULL	ZOOM
3 	* 		
9 		* 	

With a 16:9 Ratio TV or Monitor

If you are using a 16:9 aspect ratio TV or monitor and receiving an image with a 4:3 aspect ratio the image will be displayed at the 4:3 aspect ratio on your monitor unless you specify otherwise. The Screen Format menu allows you to adjust the image through the following options:

When a 4:3 source signal is received

Pillar box

Choose this when receiving a 4:3 image and you want the on-screen appearance of the video to be a centered picture with blank panels on the right and left sides.

Full

Choose this when you want the television to adjust the 4:3 image horizontally so it fills your 16:9 screen. No blank panels will be added, and the image is vertically unaltered.

Zoom

Choose this when receiving a 4:3 image and you want to maintain the correct image proportion. Top and bottom portions of the picture are cropped or cut.

When a 16:9 source signal is received

Pillar box

Choose this when receiving a 16:9 image and you want the on-screen appearance of the video to be a centered picture with blank panels on the right and left sides.

Full

This is the default format when a 16:9 source signal is received.

*NOTE: changing the Screen Format feature availability depends on the **Resolution Select** switch settings and the current broadcasting signal format.*

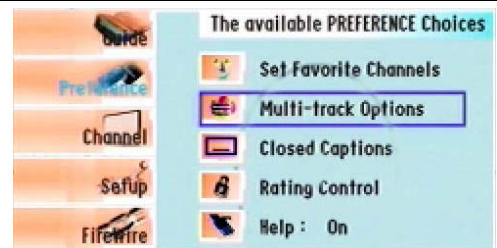
Choosing a Sound “Multitrack” on a received Digital signal

The digital-TV transmission system is capable of simultaneous transmission of many audio tracks (For example, simultaneous translations of the program into foreign languages). The availability of these additional “Multitracks” depends upon the program.

Selecting a Multitrack language

1. Press the front panel **MENU** button
2. Use the **UP/DOWN** buttons to highlight the Preference icon and press **SELECT**

Use the **UP/DOWN** buttons to highlight the Multi-track Options icons and press **SELECT**
3. Use the **UP/DOWN** buttons to highlight “Multi Language” and press **SELECT**. The submenus will be displayed



4. Use the **UP/DOWN** buttons to choose the language (English, Spanish, or French) you want and press **SELECT**.
5. To Exit, press **SELECT** three times, or wait 2 minutes for the On-screen display activity timeout.



NOTES:

- ◆ You can switch between current available multitrack languages by pressing the MTS button on the remote control.
- ◆ Once a particular language is selected, it will be the default language even if you turn the TV off or change channel.

Choosing a Sound “Multitrack” on a received Analog signal

Selecting a multitrack sound

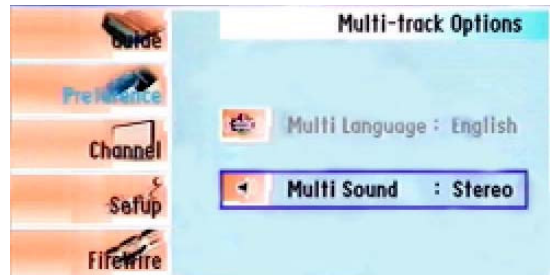
1. Press the front panel **MENU** button

2. Use the **UP/DOWN** buttons to highlight the Preference icon and press **SELECT**.

Use the **UP/DOWN** buttons to highlight the Multi-track Options icon and press **SELECT**.



3. Use the **UP/DOWN** buttons to highlight the Multi Sound icon and press **SELECT**.



4. Use the **UP/DOWN** buttons to choose the submenu (Mono, Stereo, SAP) you want and press **SELECT**.

NOTES:

- ◆ The default sound mode is Stereo
- ◆ You can also change sound multitrack by pressing the MTS button on the remote control.

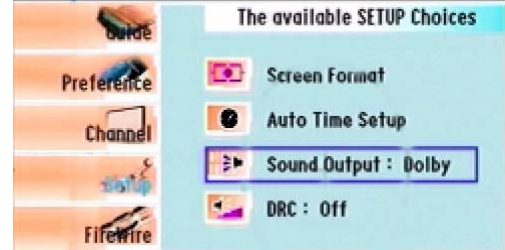
Choosing a digital Sound Format (Dolby or PCM)

Both analog and digital sounds can be output from the rear-panel connectors on your AV1010. The digital sound outputs are labeled "Optical" and "Coaxial" connectors. After connecting an optical or a coaxial digital-audio component, you must specify the transmission format (Dolby, or PCM, as appropriate to your component).

1. Press the front panel **MENU** button

2. Use the **UP/DOWN** buttons to highlight the Setup icon and press **SELECT**.

Use the **UP/DOWN** buttons to highlight the Sound Output icon and press **SELECT**.



3. Use the **UP/DOWN** buttons to choose the appropriate format (Dolby or PCM) and press **SELECT**.



4. To Exit, press **SELECT** three times, or wait 2 minutes for the On-screen display activity timeout.

NOTE: In Analog mode, only PCM is supported.

Using Dynamic Range Compression (DRC)

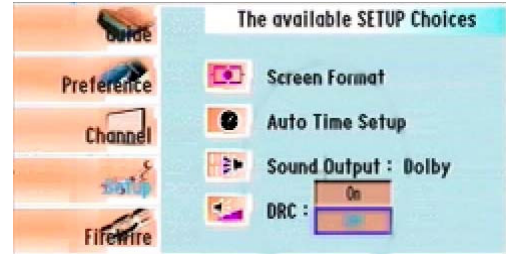
When you switch channels, the volume may vary depending on the channel. The Dynamic Range Compression function can adjust the volume difference automatically.

1. Press the front panel **MENU** button
2. Use the **UP/DOWN** buttons to highlight the Setup icon and press **SELECT**.



3. Use the **UP/DOWN** buttons to highlight the DRC: On (Off) icon and press **SELECT**.

Use the **UP/DOWN** buttons to alternate between DRC: On and DRC: Off and press **SELECT** again.



4. To Exit, press **SELECT** three times, or wait 2 minutes for the On-screen display activity timeout.

NOTE: The DRC function operates only on digital channels

Setting up Digital Captions (On-Screen Text Messages)

The Digital Captions function operates on digital channels.

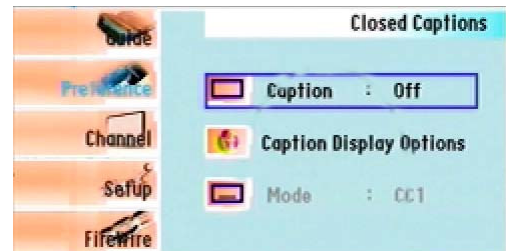
How to Activate or Deactivate the On-screen Captions

1. Press the front panel **MENU** button
2. Use the **UP/DOWN** buttons to highlight the Preferences icon and press **SELECT**.

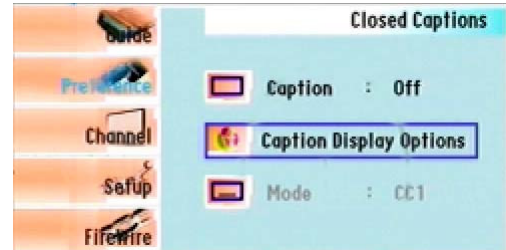
Use the **UP/DOWN** buttons to highlight the Closed Captions icon and press **SELECT**.



3. Use the **UP/DOWN** buttons to alternate between "Caption: On" and "Caption Off" and press **SELECT**.



4. Use the **UP/DOWN** buttons to highlight the Caption Display Options and press **SELECT**.

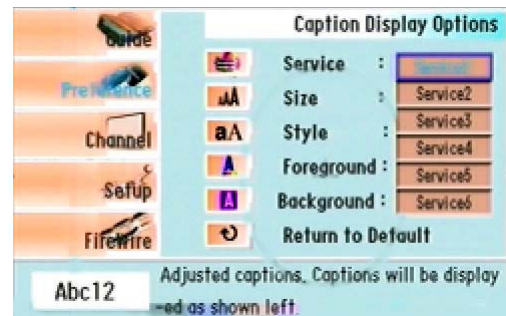


5. Select the option(Service, Size, Style, Foreground or Background) you want using the **UP/DOWN** buttons.

Use the **UP/DOWN** buttons to select the menu you want and press **SELECT**.



Service: This option consists of Service 1 ~ Service 6. The default is Service 1. Either the reading level or the language may change depending on the service option.

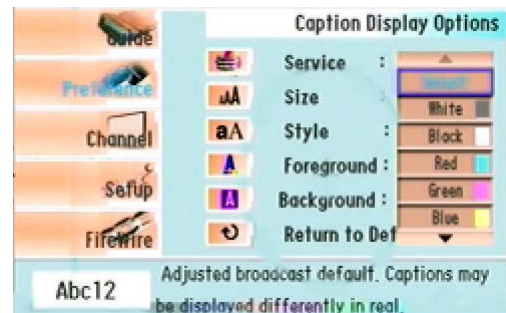


Size: This option consists of Default, Small, Standard, Large. The Default is Standard.

Style: This option consists of Default, Style 0 ~ Style 7. You can change the font you want. The default is Style 0.

Foreground: This option consists of Default, White, Black, Red, Green, Blue, Yellow, Magenta, Cyan. You can change the color of the letter. The default is White.

Background: This option consists of Default, White, Black, red, Green, Blue, Yellow, Magenta, Cyan. You can change the background color of the caption. The default is Black.



Return to Default: This option sets each of Service, Size, Style, Foreground, Background to its default.

Abc12: This will appear at the bottom of the screen every time each option is applied.

6. To Exit, press **SELECT** four times, or wait 2 minutes for the On-screen display activity timeout.

NOTES:

- ♦ The availability of captions depends on the program being broadcast.
- ♦ For other channels, which don't operate with Digital Captions feature, each press of the CAPTION button on the remote control will alternate among CC1, CC2, CC3, CC4, and OFF.

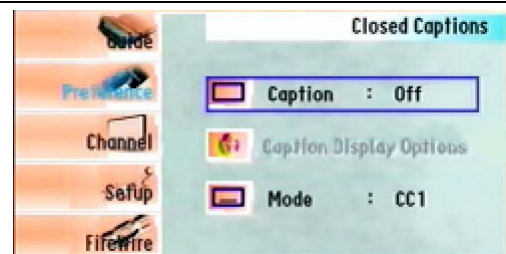
Setting up Analog Captions (On-Screen Text Messages)

The Analog Captions function operates in either analog RF channel mode or external signal (DVD, AVI, AV2) mode. (Depending on the broadcasting signal, the Analog Captions function may operate on digital channels.)

How to Activate or Deactivate the On-screen Captions

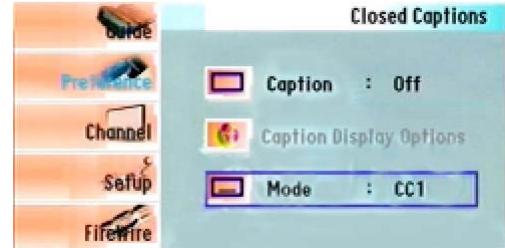
1. Press the front panel **MENU** button.
2. Use the **UP/DOWN** buttons to highlight the Preference icon and press **SELECT**.

Use the **UP/DOWN** buttons to highlight the Closed Captions icon and press **SELECT**.
3. Use the **UP/DOWN** buttons to alternate between "Caption: On" and Caption Off" and press **SELECT**.



4. Use the **UP/DOWN** buttons to highlight the Mode icon and press **SELECT**.

Select the submenu (CC1, CC2, CC3, or CC4) you want using the **UP/DOWN** buttons and press **SELECT**.



5. To Exit, press **SELECT** four times, or wait 2 minutes for the On-screen display activity timeout.

NOTES:

- ◆ The Availability of captions depends on the program being broadcast.
- ◆ You can also alternate among CC1, CC2, CC3, CC4 or OFF by pressing the CAPTION button on the remote control.
- ◆ Captions will not appear if CVBS OUT or S-Video is connected in DTV (1080i, 720p, 480p) mode.

Viewing Information about a Single Channel

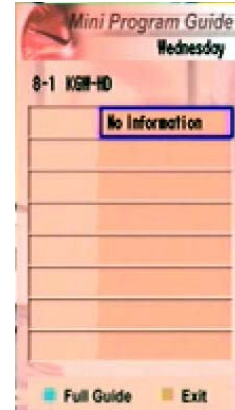
1. Press the front panel **MENU** button.
2. Use the **UP/DOWN** buttons to highlight the Guide icon and press **SELECT**.
3. Use the **UP/DOWN** buttons to highlight the Mini Guide and press **SELECT**.



4. Use the **UP/DOWN** buttons to view information about one channel by time.

You can switch between Full Guide mode and Mini Guide mode by pressing the Red button on the remote control (REW) repeatedly.

Select the program you want by using the **UP/DOWN** buttons and press the **INFO** button.



5. To Exit, press **SELECT** four times, or wait 2 minutes for the On-screen display activity timeout. You can also press the Blue button on the remote control (FF) to exit.

NOTE: You can also view information about a single channel by pressing the GUIDE button on the remote control.

Viewing Information about Channels

1. Press the front panel **MENU** button.
2. Use the **UP/DOWN** buttons to highlight the Guide icon and press **SELECT**.



3. Use the **UP/DOWN** buttons to highlight the Full Guide and press **SELECT**.



-
4. Use the Green button on the remote control (STOP) to activate “-2 Hours” and the Yellow button(PLAY) to activate “+2 Hours”
-
5. You may now:
 - ◆ Jump to a channel directly: Use the **UP/DOWN** buttons to highlight the program in the right column and press **SELECT**.
 - ◆ Obtain additional program details: Highlight the title of a program using the **UP/DOWN** buttons and press **SELECT**.
 - ◆ Exit the program guide and return to normal viewing: To Exit, press **SELECT** four times, or wait 2 minutes for the On-screen display activity timeout. You can also press the blue button on the remote control (FF) or the EXIT button on the remote control to exit.
-

NOTE: You can also view information about channels by pressing the GUIDE button on the remote control. There might be a slight difference between the displayed program times and the real times, depending on the time information transmitted by broadcasters. If you display the EPG (Electronic Program Guide) after selecting DTV(1080i, 720p, 480p) with the Resolution Select switch, no video is output through the Video Out jack or S-Video jack. When “Search” is activated in Full Guide mode, it may take a while.

Section 7: Maintenance

Introduction

This section will explain how to maintain your system. The system is quite rugged but several items need to be observed.

- ◆ Keep fan filter clean. Depending on the operating environment, the fan filter should be cleaned every six months. The fan filter may be cleaned by un-snapping the plastic filter cover, removing the filter element, cleaning it with a vacuum, or with running water, then re-installing it then, snapping the cover back in place. No screws need to be removed to clean the filter.

Section 8: Options & Accessories

Options

ITEM	DESCRIPTION
Option SDI	Adds SMPTE 259M standard definition serial digital video output
Option RS	Adds Rack Slide Kit, non-tilt, for racks up to 24" deep

Accessories


ITEM	DESCRIPTION
	Rack Mounting Hardware – Two 2U Rack Ears
	Feet for desk or shelf installation – Four with screws for mounting
	AC Power Cord
	Type F female to Type BNC male adapter
	Operators Manual
	Remote Control
	Video L R cable (bundle of 3 coaxial cables with male RCA phono ends)

Section 9: Appendix A

Trouble Shooting

If you have difficulty with your AV1010, there are several possibilities you should investigate before calling the factory.

Problem	Possible Solution
Front panel Power light does not come on.	<p>Cause:</p> <ul style="list-style-type: none">• AV1010 is not connected to AC power mains.• Rear Panel Power switch is not turned on.• Front Panel Standby switch has been pressed.• Blown fuse in the Rear Panel Power input connector. <p>Solution:</p> <ul style="list-style-type: none">• Make sure the AV1010 is connected to a live AC power source.• Switch the rear panel Power switch to the Off position for 10 seconds then turn to On position. This will over-ride the front panel Stand By switch and re-set the internal power supplies.• Unplug the AV1010. Remove the fuse from the rear panel power input connector. Visually inspect the fuse, or use an ohm meter to test the fuse. If fuse is burned or tests to be open, install the included spare fuse and try again. Replace the blown fuse as soon as possible and store new fuse in spare fuse holder space.
Black Screen	<p>Cause:</p> <ul style="list-style-type: none">• Power not connected to AV1010 or AV1010 not turned on.• Monitor not turned on or not connected or connected to wrong video output connector.• AV1010 Rear Panel Resolution Select switch or DTV OUT Select switch not in correct position for connected monitor.

	<ul style="list-style-type: none"> The Remote Control TV/Video button has been pressed causing the AV1010 to internally switch to a non used video input. (See “Disabling the IR Remote Control” section of this manual.) <p>Solution:</p> <ul style="list-style-type: none"> Turn on AV1010, and re-check that the correct video cable connects a monitor. Re-check that the AV1010 Resolution Select Switch, DTV OUT Select Switch are in the correct positions for the connected monitor. Make sure Monitor is powered and turned on. Re-check that monitor is connected to the correct AV1010 video output, and that it is configured to receive the same type of signal the AV1010 is configured to put out.
 <p>Message Bouncing around screen</p>	<p>Cause:</p> <ul style="list-style-type: none"> The AV1010 generates a “No Signal” message which bounces around the screen when tuned to a memorized digital channel and it does not receive a digital signal. <p>Solution:</p> <ul style="list-style-type: none"> Re-check the RF source is connected to the correct input. If the AV1010 was shipped by itself it is configured to use the “RF” input as the signal source. If the AV1010 was shipped with a DM1010, it is configured to use the “IF 44 MHz” input as it’s RF source. (See “Connecting Signal Sources” section of this manual.) Memorize channels again (See “Memorizing Channels (with RF Input)”, “Memorizing Channels (with IF Input)”, “Adding and Deleting Channels” and “Changing Channels” sections of this manual.) Adjust receive antenna for greater signal. <p><i>Note: Some monitors that have multiple inputs and generate their own “No Signal” message. It is important that the user be familiar with their monitor, and recognize if the “No Signal” message is generated by the monitor or the AV1010. If the user sees a “No Signal” message on the monitor when the AV1010 is not connected to the monitor, then that “No Signal” message is generated by the monitor. A “No Signal” message from the monitor will more than likely have a different looking</i></p>

	<i>screen format than the “No Signal” message shown here from the AV1010.</i>
Snowy picture	<p>Cause:</p> <ul style="list-style-type: none"> • Tuned to a memorized Analog channel of insufficient signal strength. • Tuned to a new channel that has not been memorized. The AV1010 assumes it is an analog channel unless it can determine it is a digital channel. If it determines it is a digital channel, but unable to “lock” it will display a “No Signal” message that bounces around the screen. <p>Solution:</p> <ul style="list-style-type: none"> • Re-adjust the receive antenna for greater signal or use higher gain antenna.
Intermittent signal or no signal at all.	<p>Try another channel.</p> <p>Make sure antenna is connected.</p> <p>If a power antenna, turn the power boost on. You may also want to rotate the antenna for a stronger signal.</p>
Poor sound quality, or no sound	<p>Make sure audio connectors are correct.</p> <p>Try another channel – sometimes there is trouble with the transmitted DTV audio encoding.</p> <p>Make sure the Mute button on your audio device is off.</p> <p>Try both analog and digital (coaxial and optical) audio connectors.</p>
No color, or wrong colors	<p>Make sure you have connected the AV1010 correctly to your monitor.</p>
Remote control doesn't work correctly	<p>Make sure you have fresh batteries installed the correct way in your Remote Control. Also select the correct remote command mode. “STB” is correct remote command mode for the AV1010.</p> <p>Make sure the Remote Control IR sensor is Enabled on the AV1010. (see the “Disabling the IR Remote Control” section of this manual.)</p>

<p>On Screen Menu Mini Guide or Full Guide won't go away.</p>	<p>Cause:</p> <ul style="list-style-type: none"> • If an on screen Menu Mini Guide or Full Guide is selected and no guide information is being broadcast, the Mini Guide or Full Guide is empty. In this situation there is no guide information to select using the AV1010 front panel so the front panel buttons do not allow you to exit this menu. You can exit the guide if the IR Remote Control is enabled by using the Remote Control. <p>Solution:</p> <ul style="list-style-type: none"> • Wait two minutes for the menu time out to expire. • Turn the AV1010 off then back on. • Press the Exit button on the Remote Control.
---	--

Section 10: Appendix B

Option SDI User Manual

The AV1010 Option SDI uses the Ross Video 9033 Analog to SDI Converter to drive the SDI output. The converter is driven from an internal buffered version of the AV1010 S-Video output. The converter is an OEM version without the enclosure shown in the attached Ross Video 9033 user manual.

The Ross Video SDI converter is configured at the Z Technology factory to correctly drive the AV1010 SDI output. The attached Ross Video 9033 manual is included so the user may have a deeper understanding of the SDI output.

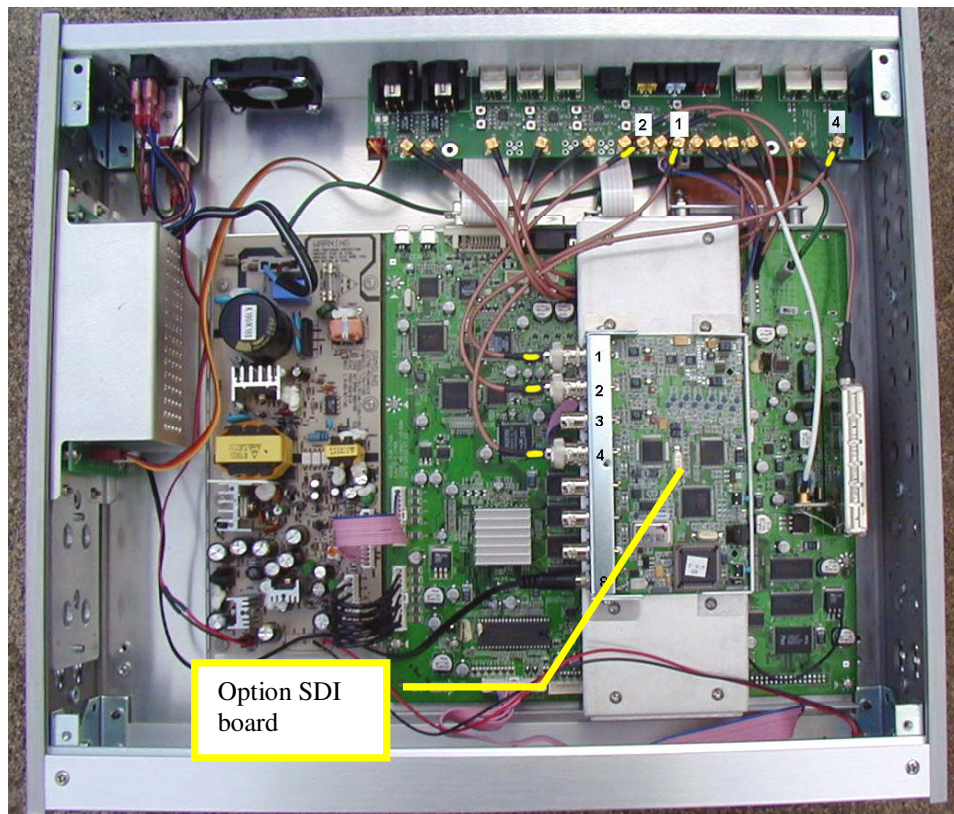


Figure 9: Option SDI board inside AV1010

